

# Sediment Risk Management Principles: Considerations During Site Assessment

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# Purpose of This Presentation

- To share with you the final Sediment Risk Management Principles that were discussed at last year's NSAC as draft principles and the new consultation/consideration process
- To propose ideas on which principles can be considered during Site Assessment
  - to get a jump on assuring the principles are followed
  - to provide project managers with early information to help them be responsive
  - to enhance SA
- Best - To get your ideas on ways to address these principles during Site Assessment/HRS scoring

# “Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites”

- ***“A RISK MANAGEMENT STRATEGY FOR PCB CONTAMINATED SEDIMENTS” - 2001 NRC REPORT*** – impetus for formalizing principles
- Relayed in OSWER Directive 9285.6-08 - Issued 2/12/02. to help make scientifically sound and nationally consistent decisions
- Established new HQ consultation process
- Many of the principles are relevant to many other Superfund sites – not only sediment
  - Mining sites frequently lead to sediment contamination, – so especially relevant as part of this session



# #1 - Control Sources Early

- Identify continuing, significant releases and how they can be controlled
- Evaluate potential for recontamination

## *Relevance during Site Assessment:*

- *Source samples are critical for attribution to PRPs and when they are release samples from a facility*
- *When collecting source samples (and any others), for HRS scoring, think about what will need to be controlled early (sample accordingly), and document and share the information clearly with project management (current and future).*

## #2 – Involve the Community Early and Often

- Provide needed technical info and assistance in interpreting data
- Facilitates acceptance of a remedy – *or, in the case of Site Assessment, helps to avoid future shock and surprise*

### *Relevance during Site Assessment*

- *May provide input on where to sample!*
- *Closer to listing – may have files that will help with SA/HRS documentation (e.g., of PRP/attribution)*
- *Get community support for action early on - and their input of site disposition (e.g., NPL-equivalent, NPL, VCP...)*

### #3 – Coordinate with States, Tribes, and Natural Resource Trustees

- Coordinate RI/FS with:
  - OW's TMDL
  - Trustee's damage assessment
- States and Tribes may have useful site data

#### *Relevance during Site Assessment*

- *May have useful site data!*
  - *Tribes are especially useful because they are frequently affected, both from a subsistence and a cultural values point of view.*
  - *Concerns brought about by site contamination will lead to much information*
- *Trustees may already have damage claims, providing useful information*
- *States may have monitoring data that is useful (DW, TMDL, RCRA....)*



## #4 - Develop and Refine a Conceptual Site Model that Considers Sediment Stability

- Consider stability (e.g., 100 year event

*Relevance during Site Assessment:*

- *The conceptual site model is started during the site assessment process and refined using sampling data*
- *Using background information, one can learn where to take more useful sediment samples – e.g., old site may have sediment contaminants buried deeper so the CSM should show deeper contamination (Note – at this point expensive modeling is not likely)*
- *Stability may play a role – e.g., if there is a major storm event, sediment may move/be disrupted, and sampling plan may have to be changed*

*Could also result in not being able to compare data from one day to another*

## #5 – Use an Iterative Approach in a Risk-Based Framework

- Test hypotheses/re-evaluate assumptions

### *Relevance during SA:*

- *SA is an iterative process*
- *Fits into NRC framework*
- *Information gathered that can be used later*
  - *Help RPM*
  - *Determine if HH or Eco-risk or both*



**NRC's Risk Management Framework**



## #6 – Carefully Evaluate the Assumptions and Uncertainties Associated with Site Characterization Data and Site Models

- Complexity of a model is related to the complexity of a site
- Peer review new models and calibration of site models

### *Relevance during Site Assessment:*

- *There is an early conceptual site model for site assessment for which assumptions are made.*

*For sediment sampling, it is important to understand uncertainties and assumptions (and when more certainty may be needed) in order to assure the “right” samples are collected - e.g., attribution or pathway samples*

- *The HRS is a screening tool and not a detailed RA process with lots of uncertainty in it.*

## #7 – Select Site-specific, Project-specific, and Sediment-specific Risk Management Approaches that will Achieve Risk-based Goals

- There is no default or presumptive remedy
- Combination is often best; e.g. dredge hot spots, rely on MNR in depositional areas.

*Relevance during Site Assessment:  
None??*

## #8 – Ensure that Sediment Cleanup Levels are Clearly Tied to Risk Management Goals

- While it is practical to use measures such as contaminant concentration in sediment to identify areas to be remediated, other measures should be used to ensure that human health and/or ecological risk reduction are being met (e.g., fish tissue contaminant concentration)

### *Relevance during Site Assessment:*

- *Possibly during an integrated SA (with and OSC or RPM), additional information (e.g., fish samples) might be collected - especially when it is evident the site will likely score.*

*Thinking ahead*



## #9 – Maximize the Effectiveness of Institutional Controls and Recognize their Limitations

- ICs do not work well for wildlife
- Follow-up actions may be needed

### *Relevance during Site Assessment:*

- *Bans on fishing/consumption are usually for bioaccumulative contaminants (e.g., Hg, PCBs, PAHs, dioxins/furans, org. Cl pesticides)*

*Therefore, focus on the human food chain threat through the surface water pathway*

## #10 – Design Remedies to Minimize Short-term Risks while Achieving Long-term Protection

- Short-term impacts may be acceptable
  - Sometimes the case for dredging
- Comparative analysis of advantages and disadvantages may be useful

### *Relevance during Site Assessment*

- *It is important to keep your eyes open, during SA, for short term risks – or imminent and substantial threat – in case the site needs some time critical removal*

## #11 – Monitor During and After Sediment Remediation to Assess and Document Remedy Effectiveness

- Iterative process, may need to redesign cap, modify or change dredging equipment
- Is MNR really working?
- Information is needed for 5-year review

### *Relevance during Site Assessment*

- *Measurement data gathered during site assessment can be used as a benchmark for site characterization – important when monitoring for change to have relevant measures for comparison*

*Especially for integrated site assessment, more measurement data (and of adequate quality) could save time and dollars later and help an OSC or RPM in defining the problem during scoping/DQO process*



# Implement New Consultation Procedures

- Tier 1 sites > 10,000 yd<sup>3</sup> of dredging or 5 acres of capping or MNR

- HQ review of proposed plan

- Consultation/considerations memo describing how the 11 principles were considered and addressed

- Tracking remedy effectiveness

- Tier 2 sites – very large, controversial or complex

- Early involvement by Contaminated Sediment Technical Advisory Group (CSTAG)

- Review continues until remedial objectives met

- 8 sites at this time

# Conclusions/Message

- The sediment risk management principles apply, with some variation for different types of sites/media, to all sites
- Project managers should start looking at implementing those principles during site assessment”
  - to improve site assessment
  - to provide useful information to future project management
- Yes, it is a good idea to do more up front (spend more money) to spend less later
  - Especially when site is expected to score